SEQUENCE LISTING

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Sorensen, Robert G.

<120> Canine Vaccines Against Bordetella Bronchiseptica

<130> PC25496A

<140> 10/767809
<141> 2004-01-29

<150> 60/443,418
<151> 2003-01-29

<160> 3

<170> PatentIn version 3.3

<210> 1
<211> 602
<212> PRT
<213> Bordetella bronchiseptica

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Ile His Ile Lys Gln Ser Asp Gly Ala Gly Val Arg Thr Ala Thr Gly
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Thr Thr Ile Lys Val Ser Gly Arg Gln Ala Gln Gly Val Leu Leu Glu
            35   40   45

Asn Pro Ala Ala Glu Leu Arg Phe Gln Asn Gly Ser Val Thr Ser Ser
        50   55   60

Gly Gln Leu Phe Asp Glu Gly Val Arg Arg Phe Leu Gly Thr Val Thr
65   70   75   80

Val Lys Ala Gly Lys Leu Val Ala Asp His Ala Thr Leu Ala Asn Val
                85   90   95

Ser Asp Thr Arg Asp Asp Asp Gly Ile Ala Leu Tyr Val Ala Gly Glu
                100   105   110

Gln Ala Gln Ala Ser Ile Ala Asp Ser Thr Leu Gln Gly Ala Gly Gly
                115   120   125

1

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Val Arg Val Glu Arg Gly Ala Asn Val Thr Val Gln Arg Ser Thr Ile
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Val Asp Gly Gly Leu His Ile Gly Thr Leu Gln Pro Leu Gln Pro Glu
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Asp Leu Pro Pro Ser Arg Val Val Leu Gly Asp Thr Ser Val Thr Ala
                165             170             175

Val Pro Ala Ser Gly Ala Pro Ala Ala Val Ser Val Phe Gly Ala Asn
            180             185             190

Glu Leu Thr Val Asp Gly Gly His Ile Thr Gly Gly Arg Ala Ala Gly
        195             200             205

Val Ala Ala Met Asp Gly Ala Ile Val His Leu Gln Arg Ala Thr Ile
    210             215             220

Arg Arg Gly Asp Ala Pro Ala Gly Gly Ala Val Pro Gly Gly Ala Val
225             230             235             240

Pro Gly Gly Phe Gly Pro Leu Leu Asp Gly Trp Tyr Gly Val Asp Val
            245             250             255

Ser Asp Ser Thr Val Asp Leu Ala Gln Ser Ile Val Glu Ala Pro Gln
            260             265             270

Leu Gly Ala Ala Ile Arg Ala Gly Arg Gly Ala Arg Val Thr Val Ser
        275             280             285

Gly Gly Ser Leu Ser Ala Pro His Gly Asn Val Ile Glu Thr Gly Gly
    290             295             300

Gly Ala Arg Arg Phe Pro Pro Pro Ala Ser Pro Leu Ser Ile Thr Leu
305             310             315             320

Arg Ala Gly Ala Arg Ala Gln Gly Arg Ala Leu Leu Tyr Arg Val Leu
            325             330             335

Pro Glu Pro Val Lys Leu Thr Leu Ala Gly Gly Ala Gln Gly Gln Gly
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Asp Ile Val Ala Thr Glu Leu Pro Pro Ile Pro Gly Ala Ser Ser Gly
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2

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Pro Leu Asp Val Ala Leu Ala Ser Gln Ala Arg Trp Thr Gly Ala Thr
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Arg Ala Val Asp Ser Leu Ser Ile Asp Asn Ala Thr Trp Val Met Thr
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Asp Asn Ser Asn Val Gly Ala Leu Arg Leu Ala Ser Asp Gly Ser Val
            405             410             415

Asp Phe Gln Gln Pro Ala Glu Ala Gly Arg Phe Lys Val Leu Met Val
            420             425             430

Asp Thr Leu Ala Gly Ser Gly Leu Phe Arg Met Asn Val Phe Ala Asp
        435             440             445

Leu Gly Leu Ser Asp Lys Leu Val Val Met Arg Asp Ala Ser Gly Gln
    450             455             460

His Arg Leu Trp Val Arg Asn Ser Gly Ser Glu Pro Ala Ser Ala Asn
465             470             475             480

Thr Met Leu Leu Val Gln Thr Pro Arg Gly Ser Ala Ala Thr Phe Thr
            485             490             495

Leu Ala Asn Lys Asp Gly Lys Val Asp Ile Gly Thr Tyr Arg Tyr Arg
            500             505             510

Leu Ala Ala Asn Gly Asn Gly Gln Trp Ser Leu Val Gly Ala Lys Ala
        515             520             525

Pro Pro Ala Pro Lys Pro Ala Pro Gln Pro Gly Pro Gln Pro Gly Pro
    530             535             540

Gln Pro Gly Pro Gln Pro Pro Gln Pro Pro Gln Pro Gln Pro Gln Pro Pro
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Gln Arg Gln Pro Glu Ala Pro Ala Pro Gln Pro Pro Ala Gly Arg Glu
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<213> Bordetella bronchiseptica

<400> 3

Asp Trp Asn Asn Gln Ser Ile Ile Lys Ala Gly Glu Arg Gln His Gly
1   5   10   15

Ile His Ile Lys Gln Ser Asp Gly Ala Gly Val Arg Thr Ala Thr Gly
                20   25   30

Thr Thr Ile Lys Val Ser Gly Arg Gln Ala Gln Gly Val Leu Leu Glu
            35   40   45

Asn Pro Ala Ala Glu Leu Arg Phe Gln Asn Gly Ser Val Thr Ser Ser
        50   55   60

Gly Gln Leu Phe Asp Glu Gly Val Arg Arg Phe Leu Gly Thr Val Thr
65   70   75   80

Val Lys Ala Gly Lys Leu Val Ala Asp His Ala Thr Leu Ala Asn Val
                85   90   95

Ser Asp Thr Arg Asp Asp Asp Gly Ile Ala Leu Tyr Val Ala Gly Glu
                100   105   110

Gln Ala Gln Ala Ser Ile Ala Asp Ser Thr Leu Gln Gly Ala Gly Gly
            115   120   125

Val Arg Val Glu Arg Gly Ala Asn Val Thr Val Gln Arg Ser Thr Ile
        130   135   140

Val Asp Gly Gly Leu His Ile Gly Thr Leu Gln Pro Leu Gln Pro Glu
145   150   155   160

Asp Leu Pro Pro Ser Arg Val Val Leu Gly Asp Thr Ser Val Thr Ala
                165   170   175

Val Pro Ala Ser Gly Ala Pro Ala Ala Val Ser Val Phe Gly Ala Asn
                180   185   190

5

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Glu Leu Thr Val Asp Gly Gly His Ile Thr Gly Gly Arg Ala Ala Gly
        195                 200                 205


Val Ala Ala Met Asp Gly Ala Ile Val His Leu Gln Arg Ala Thr Ile
        210                 215                 220


Arg Arg Gly Asp Ala Pro Ala Gly Gly Ala Val Pro Gly Gly Ala Val
225                 230                 235                 240


Pro Gly Gly Phe Gly Pro Leu Leu Asp Gly Trp Tyr Gly Val Asp Val
                245                 250                 255


Ser Asp Ser Thr Val Asp Leu Ala Gln Ser Ile Val Glu Ala Pro Gln
                260                 265                 270


Leu Gly Ala Ala Ile Arg Ala Gly Arg Gly Ala Arg Val Thr Val Ser
        275                 280                 285


Gly Gly Ser Leu Ser Ala Pro His Gly Asn Val Ile Glu Thr Gly Gly
        290                 295                 300


Gly Ala Arg Arg Phe Pro Pro Pro Ala Ser Pro Leu Ser Ile Thr Leu
305                 310                 315                 320


Gln Ala Gly Ala Arg Ala Gln Gly Arg Ala Leu Leu Tyr Arg Val Leu
                325                 330                 335


Pro Glu Pro Val Lys Leu Thr Leu Ala Gly Gly Ala Gln Gly Gln Gly
                340                 345                 350


Asp Ile Val Ala Thr Glu Leu Pro Pro Ile Pro Gly Ala Ser Ser Gly
        355                 360                 365


Pro Leu Asp Val Ala Leu Ala Ser Gln Ala Arg Trp Thr Gly Ala Thr
        370                 375                 380


Arg Ala Val Asp Ser Leu Ser Ile Asp Asn Ala Thr Trp Val Met Thr
385                 390                 395                 400


Asp Asn Ser Asn Val Gly Ala Leu Arg Leu Ala Ser Asp Gly Ser Val
                405                 410                 415


Asp Phe Gln Gln Pro Ala Glu Ala Gly Arg Phe Lys Cys Leu Met Val
                420                 425                 430
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6

Asp Thr Leu Ala Gly Ser Gly Leu Phe Arg Met Asn Val Ala Phe Ala
        435   440   445

Asp Leu Gly Leu Ser Asp Lys Leu Val Val Met Arg Asp Ala Ser Gly
    450   455   460

Gln His Arg Leu Leu Val Arg Asn Ser Gly Ser Glu Pro Ala Ser Gly
465   470   475   480

Asn Thr Met Leu Leu Val Gln Thr Pro Arg Gly Ser Ala Ala Thr Phe
            485   490   495

Thr Leu Ala Asn Lys Asp Gly Lys Val Asp Ile Gly Thr Tyr Arg Tyr
            500   505   510

Arg Leu Ala Ala Asn Gly Asn Gly Gln Trp Ser Leu Val Gly Ala Lys
        515   520   525

Ala Pro Pro Ala Pro Lys Pro Ala Pro Gln Pro Gly Pro Gln Pro Gly
    530   535   540

Pro Gln Pro Pro Gln Pro Pro Gln Pro Pro Gln Pro Pro Gln Arg Gln
545   550   555   560

Pro Glu Ala Pro Ala Pro Gln Pro Pro Ala Gly Arg Glu Leu Ser Ala
            565   570   575

Ala Ala Asn Ala Ala Val Asn Thr Gly Gly Val Gly Leu Ala Ser Thr
            580   585   590

Leu Trp Tyr Ala Glu Ser Asn
    595